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# Simplifying Variable Expressions

$x + 3 \times (10 + y) - 7x - y$  **WRITE AS A SUM**  
Use Distributive Property!

$x + 30 + 3y - 7x - y$  **GROUP LIKE TERMS**  
Use Commutative Property!

$x - 7x + 3y - y + 30$  **COMBINE LIKE TERMS**

$-6x + 2y + 30$

- 1 Identify the correct rule.
- 2 Determine whether or not the terms can be combined.
- 3 Simplify the given expression.
- 4 Analyze the expressions for terms that can be simplified.
- 5 Simplify the following terms.
- 6 Examine the following expressions.
- + with lots of tips, answer keys, and detailed answer explanations for all of the problems.



The complete package, including all problems, hints, answers, and detailed answer explanations is available for all [sofatutor.com](https://www.sofatutor.com) subscribers.



## Identify the correct rule.

Choose the right rule.



Just as Dr. Evil can't combine a shark and a penguin to make a sharkuin, the combination of unlike terms isn't possible in algebraic expressions.

- Only like terms can be multiplied. **A**
- Only like terms can be divided. **B**
- Only unlike terms can be added or subtracted. **C**
- Only like terms can be added or subtracted. **D**
- All terms can be added or subtracted. **E**
- Only numbers can be added or subtracted. **F**



## Hints for solving these problems

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of 6

### Identify the correct rule.

#### Hint #1

You know  $10 + 5 = 15$ . Therefore, numbers can be added. Numbers are like terms.

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#### Hint #2

$10 \times (3 + y) = 30 + 3y$  using the Distributive Property. As you can see, the multiplication of a number and a variable  $y$  is allowed.

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#### Hint #3

For example,  $x - 7x = -6x$  but  $3x + 2y$  can't be simplified.

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## Answers and detailed answer explanations for these problems

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### Identify the correct rule.

**Answer key:** D

**Never, ever combine unlike terms.**

Phrased a bit differently, this means that only like terms can be combined. Only like terms can be added or subtracted.

$$3y - y = 2y$$

- Since these are like terms (both terms contain the variable  $y$ , the coefficients can be subtracted, leaving us with  $3y - 1y = 2y$ .

$$3x + 2y$$

- These terms each have a different variable. No matter how hard we try, they aren't combinable.